Rehoboth Avenue Bridge
Delaware Route 1A (Rehoboth Avenue)
over Lewes and Rehoboth Canal
Rehoboth Beach
Sussex County
Delaware

HAER No. DE-22

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DEL,
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
MID-ATLANTIC REGION NATIONAL PARK SERVICE
DEPARTMENT OF THE INTERIOR
PHILADELPHIA, PENNSYLVANIA 19106

HISTORIC AMERICAN ENGINEERING RECORD

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HAER No. DE-22

Location:	Delaware Route 1A (Rehoboth Avenue) over the Lewes and Rehoboth Canal, Rehoboth Beach, Sussex County, Delaware USGS Rehoboth Beach Quadrangle, Universal Transverse Mercator Coordinates: 18.491900.428880
Present Owner:	Delaware Department of Transportation (DelDot), Dover, Delaware
Present Use:	Highway Bridge Replacement expected in March 1985
Significance:	A notable example of a Scherzer rolling lift bascule bridge and a typical example of 1920's bridge architecture. It is the second oldest bascule bridge in Delaware, out of the eleven that are still in use.
Project Information:	The Rehoboth Avenue Bridge is to be demolished and replaced by the Delaware Department of Transportation, with the assistance of the Federal Highway Administration. Mitgative documentation was prepared by T. William Brockenbrough, Jr. of DelDot, 1985.
Transmitted by:	Jean P. Yearby, HAER, 1985

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Dates of construction: The plans and specifications were approved on March 26, 1925, and the bridge was completed in May 1926.

2. Designer: Keller and Harrington of Chicago, Illinois.

3. Contractors: Al S. Fox and Company of Dayton, Ohio (general contractor), American Bascule Bridge Company of Dayton, Chicago, and Pensacola.

4. Original plans are retained by the owner either in their original form or on aperture cards. Contract documents are also retained on aperture cards. The following is a list of extant plan sheets. The letters, a, o, and c, indicate that the plan is available on aperture card, as a plan sheet, and as an 8"x10" photographic negative and print appended to this record, respectively.

Contract SC30A

a o c	1168-A1 General Plan
a o	1168-A2 Pile Plan and Fenders
a o c	1168-A3 Pier No. 2
a o	1168-A4 Abutments and Pier No. 1
a o	1168-A5 East Approach
a o	1168-A6 West Approach

Contract SC30B

a o c	1168-B1 Stress Sheet
a o c	1168-B2 Fixed Part and Counterweight
a o c	1168-B3 Main Girders
a o c	1168-B4 Floor System
a o c	1168-B5 Counterweight Support
a o c	1168-B6 Operating Machinery
a o c	1168-B7 Lock and Buffer
a o c	1168-B8 Operator's House
a o	Electrical Diagram

Shop Drawings for Contract SC30B

a	Wiring Diagrams
a	1168-S1 Fixed Part
a	1168-S2 Anchor Bolts and Stringers
a	1168-S3 Floor Beams and Laterals
a	1168-S4 Cwt. Supports
a	1168-S5 Laterals, Struts, Hangers, Cuides
a	1168-S6 Machinery Beams
a	1168-S7 Main Cirders
a	1168-S8 Main Cirders
a	1168-S9 Main Girders
a	1168-S10 Railings
a	1168-MS1 Track Plates and Racks
a	1168-MS2 Gears
a	1168-MS3 Bearings - Shim Plates - Set Collars
a	1168-MS4 Shaftings
a	1168-MS5 Front Lock
a	1168-E Erection Diagram
a	1168-E1 Anchor Bolt Diagram
a	1168-ME1 Machinery Assembly

Miscellaneous Sheets for Contracts SC30A and SC30B

a	Crossing at Rehoboth (plans and elevations provided to firms bidding on design)
a	Proposed Design (rejected swing span submission)
a	Proposed Design (rejected bascule span submission)

Contract 477

o	Repairs to Railing, North Rail
o	Ceneral Plan, Sidewalk-Railing
o	Cantilever Beams, Handrail Details

Contract 1381

a o c	Plans and Details
a o c	Typical Sections
a o c	Drawing E1 (Erection Diagram)

5. Alterations and additions:

   a. Lamp posts on corners removed by unknown party at an unknown date after November 8, 1937.

   b. Sidewalk added on south side and railing relocated in 1937 by Aldwyn Construction Company of Bryn Mawr, Pennsylvania.

   c. Timber deck replaced with open grid steel deck in 1956 by the High Welding Company of Lancaster, Pennsylvania.

B. Historical Context:

1. General: The bascule bridge, characterized by a drawspan rigidly connected to a counterweight, is ancient in origin but did not become common until the Scherzer design was patented in 1893 by William Scherzer of Cicago. The Scherzer design was one of the first power-driven bascule bridges and marked the beginning of a 30 to 40 year period in which many bascule bridges were built. Several other bascule mechanisms were patented in the 1890s, but the Scherzer is recognized as one of the most popular in the first two decades of the twentieth century.

2. Site: The Rehoboth Avenue Bridge was constructed as two parts (A and B) of the project (SC30) which consisted of building Rehoboth Avenue from where it left what is now Delaware Route 1 to within 1/2 mile of the beach. (A copy of the general plan is appended.) Contract SC30A was for construction of the foundations and approach spans. Contract SC30B was for the construction of the bascule span and included the machinery and the operator's house. Construction of the roadway on either side was done under contract SC30C.

C. Early Photographs: Negatives and contact prints are appended.

1. South Elevation of Bridge Site During Construction, August 4, 1925. The bridge in the background is a swing span railroad bridge which has since been removed.

2. View West Across Bridge on November 8, 1937. Note that the lamps on the bridge do not match those shown on the plans.

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character: The bridge is a three-span, single-leaf bascule bridge operated by the patented Scherzer rolling list mechanism. Typical of bascule bridge of its time, it is relatively plain in appearance excepting the lamp posts which were replaced at the corners and have since been removed.

2. Condition of fabric: The bridge is largely unchanged from its original design. The alterations, which were discussed in Part 1 have been done sympathetically and with minimal effect on the character of the bridge. While critical to the usage of the bridge, the effects of weather have caused only minor damage to the bridge's appearance. Rust has substantially reduced the capacity of the bridge's superstructure and the bridge's locking mechanism has failed and has been replaced with a chain and a come-along.

B. Description of the Structure: Copies of early photographs and photocopies of selected construction plans have been appended. Complete construction plans are on file in the DelDot Bridge Design Section. Copies of these plans and of all or most of the shop drawings for the bascule span and machinery are on aperture cards in the DelDot Records Center. (See Parts 1.A.4 and 1.C.)

PART III. OPERATION

A. Theory: The unique feature of the Scherzer bascule is the rolling lift mechanisms. In this mechanism, each girder has a fan-shaped "rocker" which arcs downward from the bottom flange, opening towards the counterweight. When the bridge is opened, the bascule span is rolled backward on these "rockers" with motive force applied just above the bottom flanges of the main girders, approximately at the origins of the "rocker" arcs. Because the span is pulled back as it is raised, the counterweight can be made shorter and deeper, and the bascule pier can be moved closer to the bank, resulting in a wider open channel.

B. Practice: Raising the span begins with notifying the operator either by telephone or in person. The operator then activates a warning gong (which rings continuously until the bridge is opened to roadway traffic again), turns traffic signals on both approaches from green to red, and lowers crossing gates on both approaches. These three actions are accomplished by pressing buttons on the control panel in the southwest corner of the operator's house.

When the gates are down, the operator walks out to the locking mechanism, located at the west end of the span. The original locking mechanism was operated by means of a removable lever inserted through a slot in the deck. When this mechanism failed, a chain and come-along were introduced instead of attempting repairs.

After unlocking the span, the operator walks back to the operator's house. Using a crank-shaped dial on the control panel, the operator then raises the bridge. To lower the bridge, the procedure above is reversed.

If there is an electrical failure, the bridge can be operated manually from inside the bascule pier. The original construction drawings refer to, but do not show, a trap door in the deck. This door is no longer present and may have been eliminated when the deck was replaced. Presently, access is, by way of a flight of wooden stairs, on the south side and a wooden catwalk along the channel side of the pier. These are later additions, probably concurrent with the removal of the trap door.

To raise the bridge manually, two operators are required. They stand on curved wooden platforms, one on each side of the centerline of the bridge, and turn a pair of hand cranks which drive a shaft located roughly opposite the drive shaft of the electric motor. As the bridge rises, the operators are able to remain upright by moving back along the curve of the platforms.

Illumination inside the pier is provided by three light fixtures controlled by a single switch on the control panel in the operator's house.